

Application No. 10/581,624
AMENDMENT A
Reply to Office Action of June 8, 2009

REMARKS/ARGUMENTS

Introduction

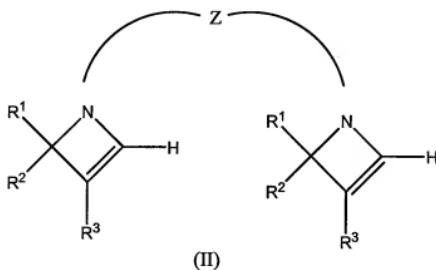
Applicants confirm the election of claim 1. Claims 2 and 4-11 are withdrawn from consideration. Claim 1 is pending.

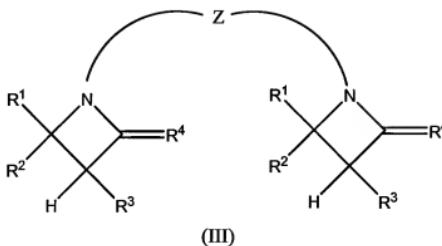
The Obviousness Rejection Based Upon Swarup In View Of The Lab Manual

The Examiner rejected claim 1 as obvious based upon the combination of United States Patent No. 5,276,166 to Swarup in view of a lab manual at www2.volstate.edu/chem/2010/Labs/Cyclohexene.html. For the reasons set forth below, applicants respectfully traverse this rejection.

The General Formulas In Claim 1

General formulas (II) and (III) in claim 1 are set forth below.

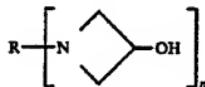




The References

1. Swarup

Swarup describes organic compounds which have at least two azetidinol moieties having the structural formula set forth below where n is from 2-4 and R includes alkylene, arylene, aralkylene, cycloalkylene or hetero atom.



where n is 2-4.

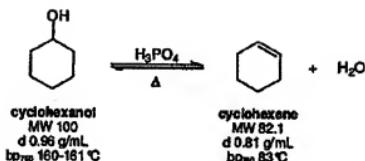
Later in his patent Swarup describes using the polyazetidinols by blending them with a polymeric material having carboxylic acid groups at ambient temperature after preparation of the polymer and neutralizing the polymer. At column 3, lines 3-20, Swarup states,

Useful compositions containing the polyazetidinols can be prepared by blending the polyazetidinol with a carboxylic acid group containing polymeric material. For example, when the carboxylic acid group containing polymeric material is an acrylic polymer, the polymer can be prepared by addition of monomer and initiator to a solvent charge under reflux conditions over a period of about 1 to 5 hours. Upon completion of the monomer and initiator feed, the polymer is neutralized with an appropriate base either at ambient temperature or elevated temperature so long as the temperature is below the boiling point of the solvent and the base. Finally, the polyazetidinol is added at ambient temperature to yield the ungelled product. These compositions can then be further used to prepare coating films by curing the material by baking at elevated

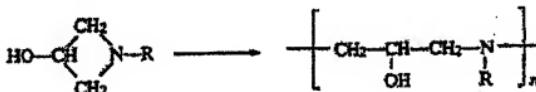
temperature.

2. The Lab Manual

The lab manual describes the dehydration of a cyclic alcohol with heat in the presence of phosphoric acid as set forth below.



This reaction does not apply, however, to azetidines. Azetidines polymerize in the presence to protonic acids. This is seen by reference to the attached page 768 of the the "Handbook of Polymer Synthesis", part A. See attachment A. The Handbook shows the following reaction is initiated by protons.



In short reaction described in the lab manual cited by the Examiner is not relevant to dehydrate a ring to obtain applicants' claimed compound. Following the manual, a dehydrated ring would not result, but rather a nitrogen polymer.

The Examiner's Combination Of References Does Not Result In The Claimed Compounds

Applicants respectfully submit that the citation of Swarup is taken out of context. At column 3, lines 3-18, Swarup describes preparing an acrylic polymer by refluxing the corresponding monomer with an initiator. After preparing the polymer, Swarup neutralizes it with a base at ambient temperature *and the polyazetidinol thereafter is added at ambient temperature*. Swarup clearly does not disclose that the azetidine derivative is or has to be

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reacted with an acid at high temperatures.

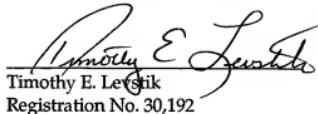
Further, the "lab manual" cited by the Examiner refers to the reaction of cyclohexanol with phosphoric acid to give cyclohexene. This reaction cannot be applied to azetidine derivatives to dehydrate them as is shown by the "Handbook of Polymer Synthesis", Part A, p. 768. N- substituted azetidines are polymerized in the presence of protonic acids, not dehydrated to provide the claimed compounds as asserted by the Examiner. Hence, even if the azetidine derivatives described by Swarup et al. were reacted with protonic acid, the azetidine derivatives of the present invention would never be obtained.

Conclusion

Applicants respectfully submit that the subject matter of the present application is not rendered obvious by Swarup in combination with the lab manual. Applicants respectfully request reconsideration and allowance of the pending claims.

The Commissioner is hereby authorized to charge any additional fees which may be required in this application under 37 C.F.R. §§ 1.16-1.17 during its entire pendency, or credit any overpayment, to Deposit Account No. 06-1135.

Respectfully submitted,
FITCH, EVEN, TABIN & FLANNERY



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Dated: September 28, 2009

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Attachment A

A series of papers demonstrates that azetidinium salt is the active species in the polymerization of N-substituted azetidines [117,176,179,180]. The initiation can occur by the use of proton acids or by the azetidinium salt prepared separately [179]. Table 7 lists rate constants and thermodynamic data for azetidine polymerizations [179].

The polymerization of azetidinols tends to yield low-molecular-weight polymers [169,180]. For example, in a study of the polymerization of 3-hydroxy-N-isopropylazetidine and 3-hydroxy-N-cyclohexylazetidine, regardless of initiator, M_w was <20, M_n was typically 2000 or less, and the intrinsic viscosity was about 0.07 dL/g [180]. The termination or transfer reactions in azetidinol polymerization are not fully understood [179], although the polymer structures proposed are as follows:

